AMENDMENTS

Claims:

Please amend the claims as indicated hereafter.

1. (Canceled)

2. (Currently Amended) The method according to claim 42 ~~37~~, wherein the primer is a fragment of deoxyribonucleic or ribonucleic acid, an oligodeoxyribonucleotide, an oligoribonucleotide, or a copolymer of deoxyribonucleic acid and ribonucleic acid.

3. (Currently Amended) The method according to claim 42 ~~37~~, wherein the nucleic acid of interest is deoxyribonucleic acid, a ribonucleic acid, or a copolymer of deoxyribonucleic acid and ribonucleic acid.

4.-7. (Canceled)

8. (Currently Amended) The method according to claim 42 ~~37~~, ~~wherein in step (d), the duplex from step (c) is contacted with non-terminator nucleotides,~~ wherein each ~~non-terminators~~ dNTP is labeled with the same or different detectable ~~marker~~ label.

9. (Currently Amended) The method according to claim 42 ~~37~~, wherein said detectable ~~marker~~ label comprises an enzyme, radioactive isotope, a fluorescent molecule, or a protein ligand.

10. (Canceled)

11. (Currently Amended) The method according to claim 42 ~~37~~, wherein said enzyme is template-dependent.

12. (Original) The method of claim 11, wherein the template-dependent enzyme is DNA polymerase.

13. (Currently Amended) The method according to claim 12, wherein the DNA of polymerase is *E. coli* DNA polymerase I or a fragment ~~the "Klenow fragment"~~ thereof, T4 DNA polymerase, T7 DNA polymerase, or *T. aquaticus* DNA polymerase.

14. (Original) The method according to claim 11, wherein said enzyme is RNA polymerase or reverse transcriptase.

15. (Currently amended) The method according to claim 42 ~~37~~, wherein the primer comprises ~~on~~ one or more moieties that permit affinity separation of the primer from the unincorporated reagent and/or the nucleic acid of interest.

16. (Currently amended) The method according to claim 42 ~~37~~, wherein the primer comprises one or more moieties that links the primer to a solid surface.

17. (Original) The method according to claim 15, wherein the moieties comprises biotin or digitonin.

18. (Original) The method according to claim 16, wherein the moieties comprises biotin or digitonin.

19. (Original) The method according to claim 15, wherein the moieties comprises a DNA or RNA sequence that permits affinity separation of the primer from the unincorporated reagent and/or the nucleic acid of interest via base pairing to a complementary sequence present in a nucleic acid attached to a solid support.

20. (Original) The method according to claim 16, wherein the moieties comprises a DNA or RNA sequence that permits affinity separation of the primer from the unincorporated reagent and/or the nucleic acid of interest via base pairing to a complementary sequence present in a nucleic acid attached to a solid support.

21. (Original) The method according to claim 15, wherein the moieties comprises a DNA or RNA sequence that allows the primer to link to a solid support via base pairing to a complementary sequence present in solid surface.

22. (Original) The method according to claim 16, wherein the moieties comprises a DNA or RNA sequence that allows the primer to link to a solid support via base pairing to a complementary sequence present in solid surface.

23. (Currently amended) The method according to claim 42 ~~37~~, wherein the nucleic acid of interest has been synthesized enzymatically *in vivo, in vitro,* or synthesized non-enzymatically.

24. (Currently amended) The method according to claim 42 ~~37~~, wherein the nucleic acid of interest is synthesized by polymerase chain reaction.

25. (Currently Amended) The method according to claim 42 ~~37~~, wherein the nucleic acid of interest comprises non-natural nucleotide analogs.

26. (Currently Amended) The method according to claim 25, wherein the non-natural nucleotide analogs comprise deoxyinosine or ~~7-dezaz-2'-deoxyguanosine~~ 7-deaza-2'-deoxy-guanosine.

27. (Currently Amended) The method according to claim 42 ~~37~~, wherein the sample comprises genomic DNA from an organism, RNA transcript thereof, or cDNA prepared from RNA transcripts thereof.

28. (Currently Amended) The method according to claim 42 ~~37~~, wherein the sample comprises extragenomic DNA from an organism, RNA transcripts thereof, or cDNA prepared from RNA transcripts thereof.

29. (Previously Amended) The method according to claim 27, wherein the organism is a plant, microorganism, bacteria, or virus.

30. (Previously Amended) The method according to claim 28, wherein the organism is a plant, microorganism, bacteria, or virus.

31. (Original) The method according to claim 27, wherein the organism is a vertebrate or invertebrate.

32. (Original) The method according to claim 28, wherein the organism is a vertebrate or invertebrate.

33. (Original) The method according to claim 27, wherein the organism is a mammal.

34. (Original) The method according to claim 28, wherein the organism is a mammal.

35. (Original) The method according to claim 27, wherein the organism is a human being.

36. (Previously amended) The method according to claim 28, wherein the organism is a human being.

37-41. (Canceled).

42. (New) A method for detecting variations of a nucleotide at a defined site of a nucleic acid comprising:

(a) identifying a first form of a nucleic acid having a first nucleotide X at the defined site, wherein X is A, T, G, C, or U;

(b) performing a primer extension reaction on a nucleic acid sample containing a second nucleotide Y at the defined site using a primer extension reaction mixture comprising:

(i) a primer that hybridizes upstream of the defined site of the nucleic acid sample so that the first unpaired base immediately downstream of the 3' end of the primer is Y,

(ii) a nucleotide combination in which nucleotides complementary to X are omitted, the nucleotide mixture combination consisting of:

(1) dTTP or dUTP, dCTP, and dGTP when X is T and at least one of dTTP, dCTP, dGTP or dUTP is labeled with a detectable label, or

(2) dCTP, dGTP and dATP when X is A or U and at least one of dCTP, dGTP and dATP is labeled with a detectable label, or

(3) dGTP, dATP, and dTTP or dUTP when X is G and at least one of dGTP, dATP, and dTTP or dUTP is labeled with a detectable label, or

(4) dATP, dTTP or dUTP, and dCTP when X is C and at least one of dATP, dTTP or dUTP, and dCTP is labeled with a detectable label; and

(d) analyzing the primer extension products formed in (b), wherein the presence of a labeled primer extension product indicates that Y does not equal X.